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(11) **EP 0 702 292 A3**

(12) **EUROPEAN PATENT APPLICATION**

(88) Date of publication A3:
03.07.1996 Bulletin 1996/27

(51) Int. Cl.⁶: **G06F 9/44**, G06F 17/50

(43) Date of publication A2:
20.03.1996 Bulletin 1996/12

(21) Application number: **95306477.1**

(22) Date of filing: **14.09.1995**

(84) Designated Contracting States:
DE FR GB

(30) Priority: **19.09.1994 US 308250**

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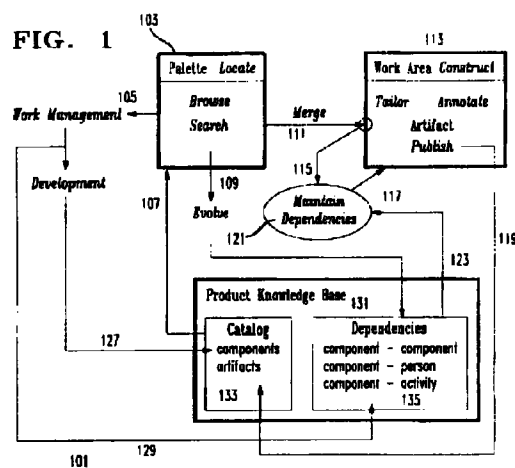
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(54) **Graphical environment for constructing systems**

(57) Apparatus for constructing a complex artifact out of primitive artifacts and other complex artifacts. The apparatus has a permanent knowledge base of primitive artifacts, previously-made complex artifacts, and rules defining how complex artifacts are made from primitive artifacts. All artifacts in the permanent knowledge base have been checked for consistency. Artifacts from the permanent knowledge base are displayed in a search area as directed graphs in which the artifacts are represented by nodes. A user may search the permanent knowledge base, and the directed graphs in the search area show the results of the search. To construct a new complex artifact or to add to a complex artifact under construction, the user selects nodes of the directed graphs which represent desired component artifacts. Information about the desired artifacts is copied from the permanent knowledge base to a working knowledge base and a directed graph of the contents of the working knowledge base is displayed in a work area. When information is added to the working knowledge base, consistency checks are made using the rules and the information in the permanent knowledge base. The results of the consistency checks appear in the display in the work area. A user may store an artifact under construction in the permanent knowledge base. A mapping editor permits the user to determine how object artifacts are mapped to the displays of the directed graphs.



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EUROPEAN SEARCH REPORT

Application Number
EP 95 30 6477

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
X	EP-A-0 511 065 (FRANCE TELECOM) 28 October 1992 * abstract *	1	G06F9/44 G06F17/50
A	--- SOFTWARE - PRACTICE AND EXPERIENCE, JAN. 1987, UK, vol. 17, no. 1, ISSN 0038-0644, pages 61-76, XP002001106 ROWE L A ET AL: "A browser for directed graphs" * page 61, line 1 - page 73, line 6 *	1	
A	--- IEEE COMPUTER GRAPHICS AND APPLICATIONS, JULY 1986, USA, vol. 6, no. 7, ISSN 0272-1716, pages 30-38, XP002001107 BETTELS J ET AL: "The PIONS graphics system" * abstract * * page 33, left-hand column, line 6 - page 38, left-hand column, line 14 *	1	
A	--- WO-A-92 11602 (SARNOFF DAVID RES CENTER) 9 July 1992 * abstract *	1	TECHNICAL FIELDS SEARCHED (Int.Cl.6) G06F
A	--- ESEC '87: 1ST EUROPEAN SOFTWARE ENGINEERING CONFERENCE. PROCEEDINGS, STRASBOURG, FRANCE, 9-11 SEPT. 1987, ISBN 3-540-18712-X, 1987, BERLIN, WEST GERMANY, SPRINGER-VERLAG, WEST GERMANY, pages 101-109, XP002001108 TICHY W F ET AL: "Knowledge-based editors for directed graphs" * abstract *	1	
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 22 April 1996	Examiner Schenkels, P
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

EPO FORM 1503 03.82 (P04C01)



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EUROPEAN SEARCH REPORT

Application Number
EP 95 30 6477

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
Y	PROCEEDINGS OF THE NATIONAL AEROSPACE AND ELECTRONICS CONFERENCE (NAECON), DAYTON, MAY 21 - 25, 1990, vol. 2, 21 May 1990, INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS, pages 618-623, XP000356846 HABEREDER H ET AL: "GRAPHIC ENTRY WORKSTATION FOR SIGNAL PROCESSING APPLICATIONS" * the whole document *	2-4	TECHNICAL FIELDS SEARCHED (Int.Cl.6)
Y	PROCEEDINGS OF THE FIFTH INTERNATIONAL WORKSHOP ON COMPUTER AIDED SOFTWARE ENGINEERING, MONTREAL, JULY 6 - 10, 1992, no. WORKSHOP 15, 6 July 1992, FORTE G; NAZIM H MADHAVJI; MULLER H A, pages 191-195, XP000343089 SIBBALD S ET AL: "SOFTWARE PROCESS ENACTION WITH VPL" * page 193, left-hand column, line 19 - right-hand column, line 32; figures 2-6 *	2-4	
A	JOURNAL OF ELECTRONIC IMAGING, vol. 1, no. 2, 1 April 1992, pages 192-202, XP000323342 KLINGLER J W ET AL: "VISUAL PROGRAMMING SYSTEM FOR DEVELOPMENT OF IMAGE PROCESSING APPLICATIONS" * page 192, left-hand column, line 1 - page 197, left-hand column, line 43; figures 1-3 *	2-4	
A	EP-A-0 295 760 (TEKTRONIX INC) 21 December 1988 * column 3, line 36 - column 7, line 20 * * column 14, line 20 - column 27, line 43; figures 1-28 *	2-4	
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 22 April 1996	Examiner Schenkels, P
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

EPO FORM 1503 03.82 (P04C01)



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Application Number
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DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
A	INTERNATIONAL JOURNAL OF PARALLEL PROGRAMMING, vol. 19, no. 2, 1 April 1990, pages 75-110, XP000276598 BAILEY D A ET AL: "PARAGRAPH: GRAPH EDITOR SUPPORT FOR PARALLEL PROGRAMMING ENVIRONMENTS" * page 75, line 1 - page 79, line 6; figure 1 * -----	2-4	
			TECHNICAL FIELDS SEARCHED (Int.Cl.6)
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 22 April 1996	Examiner Schenkels, P
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

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CLAIMS INCURRING FEES

The present European patent application comprised at the time of filing more than ten claims.

- ☐ All claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for all claims.
- ☐ Only part of the claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for the first ten claims and for those claims for which claims fees have been paid, namely claims:
- ☐ No claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for the first ten claims.

LACK OF UNITY OF INVENTION

The Search Division considers that the present European patent application does not comply with the requirement of unity of invention and relates to several inventions or groups of inventions, namely:

See Sheet B.

- ☒ All further search fees have been paid within the fixed time limit. The present European search report has been drawn up for all claims.
- ☐ Only part of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the inventions in respect of which search fees have been paid, namely claims:
- ☐ None of the further search fees has been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims, namely claims:



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LACK OF UNITY OF INVENTION

EP 95306477.1

The Search Division considers that the present European patent application does not comply with the requirement of unity of invention and relates to several inventions or groups of inventions, namely:

Claim 1 : Manner of display for a graph

Claims 2-4: Interactively specifying a target system